

# **COMPREHENSIVE PLAN**

**for**

**CHRISTIAN COUNTY, MISSOURI**

**DECEMBER 7, 1992**

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## INTRODUCTION

### Planning for the future of Christian County

Historically, Christian County has been a rural area of Southwest Missouri, characterized by small communities, scattered low density residential development and agricultural/animal husbandry activities. Since the 1980's, however, In the 1980's Christian County began to experience rapid urbanization and development pressures that quickly began to change the rural landscape and had notable impacts on the quality of the County's natural resources, the existing infrastructure system and traditional land use activities and development patterns.

In response to the issues that attend rapid urbanization, including land use conflicts, maintenance of groundwater quality and proper disposal of sewage and solid waste, voters approved planning and zoning authority for Christian County in April of 1990. With the formation of the County's first Planning and Zoning Commission, the Commission was charged with the task of preparing the Comprehensive Plan and related land development regulatory controls for the County.

In 1991, the Center for Resource Planning and Management and the Christian County Planning and Zoning Commission initiated a series of information meetings throughout the County to explain the planning process ahead, the purposes of the comprehensive plan and to obtain citizen input on area issues, needs and desires for the future. The result was a Comprehensive Plan intended to serve as a guide for the future development of the County that is responsive to public desires to maintain a high quality of life and protect the County's natural resources while allowing for balanced growth and development. As a result of its continued growth Christian County will be moving from a second class to a first class status which presents several issues the County must prepare to address. This document is intended to act as an assessment of the County's current condition and to offer continued guidance as Christian County continues to develop.

## **Purpose of the Plan**

The primary purpose of the Comprehensive Plan is to provide a series of goals, objectives and strategies that will serve to guide the daily decision-making process on development and resource management issues. The plan provides the basis for elected officials, advisory boards and citizens to make informed decisions about the County's future growth and development. Decisions that are made based on the Plan are therefore better able to withstand legal challenges. The Comprehensive Plan is a statement of future desires for Christian County and actions to be undertaken to achieve these desires.

## **Contents of the Comprehensive Plan**

The Christian County Comprehensive Plan is organized in three general sections that include (1) existing conditions and needs, (2) future development strategies and policies, and (3) appendices and support material. Chapters 1-11 provide a summary of existing needs, conditions and development trends in the County, covering topics such as land use patterns, physical characteristics, population and economy, community facilities and transportation needs. This information, which serves as the primary database for Christian County, has been utilized to establish goals and objectives for the County and to prepare recommendations, policies and guidelines for future development.

Chapters 12-16 outline goals and objectives, land development standards and policies and resource management recommendations on issues of concern to the County, including the transportation plan and future land use. Also outlined are recommended priority actions and implementation strategies.

The appendices section of the Plan contains more detailed data, reference materials and standards utilized in the analysis of existing conditions and preparation of policy recommendations

for Christian County. Appendices materials are noted throughout the document for reference by persons interested in methodologies employed or specific information.

## STUDY AREA

Christian County covers approximately 564 square miles in Southwest Missouri and is bordered by Greene, Lawrence, Stone, Taney, Douglas and Webster Counties (see Figure 2-1). Christian County's northern boundary is situated approximately one mile south of Springfield, the major metropolitan center in Southwest Missouri. Although Christian County is one of the fastest growing counties in the State of Missouri and is considered part of the Springfield Metropolitan Statistical Area (Greene, Christian and Webster Counties), the southern part of the County is predominantly rural in character.

The majority of the County is unincorporated (555.6 square miles). Incorporated cities in Christian County include Billings, Clever, Fremont Hills, Nixa, Highlandville, Ozark, Saddlebrooke and Sparta (see Figure 2-2). Of these cities, Nixa and Ozark are the largest with 2000 populations of 12,124 and 9,665, respectively.

Primary access to Christian County is provided by U.S. Highway 65, U.S. Highway 160, U.S. Highway 60 and MO. Highway 14 (see Figure 2-2). Both Highways 160 and 65 serve as the major north-south routes connecting Nixa and Ozark to Springfield and the growing tourism/recreation centers in the Branson and Table Rock Lake areas to the south. MO. Highways 14 and CC provide the major east-west access route across the northern third of Christian County, linking the County's various cities and villages.

FIGURE 2-1

# STUDY AREA LOCATION

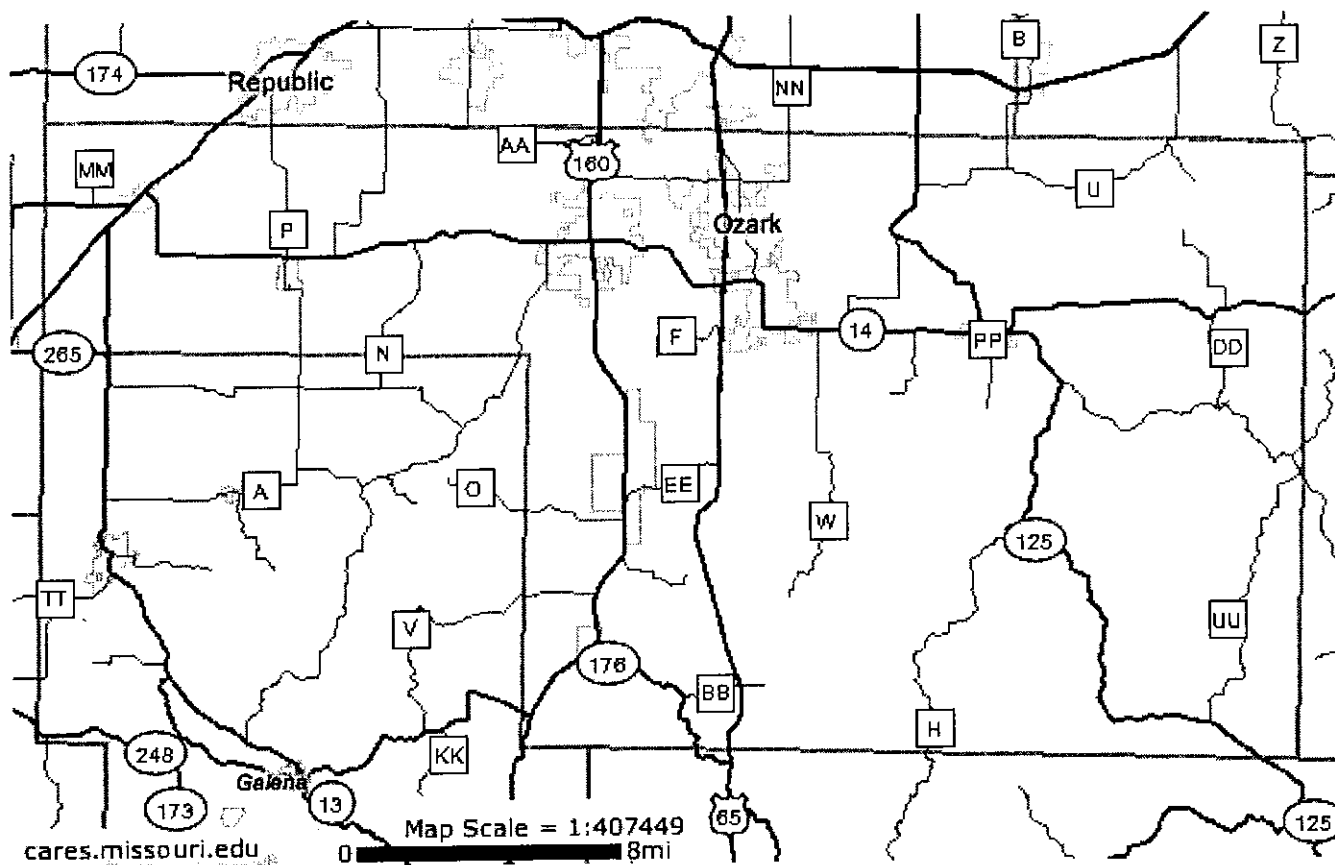


FIGURE 2-2

INCORPORATED CITIES IN CHRISTIAN COUNTY





## **HISTORICAL BACKGROUND**

The Christian County area has a varied pre-European settlement history. The area was intermittently visited and occupied by several Indian groups, including Paleo-Indians, Archaic peoples, Woodland Indians and Mississippian peoples. When the first hunters and trappers entered the region in the early 1800s, the Christian County area was occupied by the Osage Indians. Control of the Christian County area passed from the Indians to the Spanish and French until it became a territory of the United States through the Louisiana Purchase of 1803 (Christian County Centennial, Inc., 1959, 1).

The rivers of the Ozarks region were the main avenues of exploration. Rivers, such as the White, the James and the Finley, provided early trappers and hunters with food and income as well as transportation through the region. Henry Rowe Schoolcraft explored the area in 1819 and the first permanent settlers followed within two years. The Pettyjohns, Wells and Pattersons were among the first families to move into the area in 1822, settling near the present day communities of Ozark and Nixa. Christian County was formally organized as a county by an act of the Missouri Legislature on March 8, 1859 (Christian County Centennial, Inc., 1959, 2). Because of its central location and accessibility, Ozark was selected as the county seat.

Although settlers arrived in Christian County in a steady but slow stream in the early 1800's, the rate of settlement increased in 1838 with the opening of a United States Land Office in Springfield and the offering of Christian County lands for homesteading. The Land Office made it possible for residents to obtain title to already settled lands and insured ownership titles for future settlers (Christian County Centennial, 1959, 4).

The area's rivers also served as a focal point for the development of permanent communities in Christian County. Early settlers who farmed the rivers' fertile bottomlands also depended on the

rivers for grain milling. The town of Ozark developed around Hoover's Mill, which was built in 1833 on the Finley River. John Hoover constructed another mill at the site of present Lindenlure in 1840, which was then a small settlement replete with a general store and a distillery. The settlement of Riverdale also developed around a mill, with Nixa area residents utilizing its' services.

The City of Billings developed in a fertile agricultural area in the northwestern section of the County. First settled in 1835, this community's population required a post office by 1860. The growth of Billings was spurred by the extension of the St. Louis and San Francisco railroad through the area in 1871. Billings was officially incorporated in 1884.

The advent of the railroads brought new settlement patterns and economic growth to Christian County. Chadwick, which was already a small village by 1842, was transformed into a boomtown by the location of the Springfield and Southern Railroad in 1882. The railroad utilized the area's timber reserves for tie production and industry.

While Chadwick and Ozark became shipping centers for agricultural products to and from southern Missouri and northern Arkansas, Sparta became a center for shipping railroad ties and timber. The rail line between Chadwick and Ozark did a thriving business into the 1920s; however, the line was eventually abandoned in 1934 due to a decline in the timber industry and an increase in automobile and truck transportation.

Nixa and Clever also developed along primary transportation routes. The City of Nixa developed at the intersection of two thoroughfares, the Wilderness Road leading south from Springfield and a route (current MO. Highway 14) leading west from the agricultural areas around Ozark. Nixa was incorporated as a village in 1902. Clever began as a trading post along the Old Wire Road, a principal road west of the Mississippi running from St. Louis to the southwest United States. Incorporated in 1909, Clever's growth was also spurred by its proximity to the railroad.

Settlement in Christian County was not limited to just the river bottom lands and along major transportation routes. Many settled in the less fertile and heavily forested areas of eastern and southern Christian County, dependent on a lumbering and cattle raising economy transplanted from the rugged hills of Tennessee and Kentucky.

Christian County has experienced many changes in its economy since the mid-1800s. Grain crops, fruits, vegetables, dairy and beef cattle dominated the County's early agricultural economy. Through the late 1800s to early 1900s the area's agricultural base also spurred related agricultural businesses, ranging from grist milling to cheese production to vegetable canning. Many of these early industries are no longer in existence. A decreasing demand for the area's grain, fruit and vegetable produce resulted in a shift from field crops to beef and dairy cattle after the Great Depression. While grain production is still found in many areas of the County, dairy and beef cattle production continue to dominate the agricultural sector.

Since WWII, Christian County has experienced steady growth with a more diversified economy. The primary impetus to the County's growth has been proximity and improved road linkages with Springfield to the north. Rapid industrial growth in the Springfield area during the 1960s and 1970s provided employment opportunities within commuting distance for Christian County residents. During the 1980s, the County continued to attract new residents, many who desired to live in a more rural atmosphere but within close proximity to the amenities of the Springfield metropolitan area.

A second major impetus to rapid growth in Christian County over the past several years has been the growing tourism and recreation economy to the south in Branson and along Table Rock Lake and Lake Taneycomo. Christian County has benefited from the tourist flow and the development of recreation related manufacturing and service industries.

Christian County today exhibits a unique pattern of development with a diversifying economic base. Continued growth in southern Springfield is leading to increased residential development and service/convenience commercial development in the northern part of Christian County. While much of southern Christian County retains a more pristine and undeveloped character, due to the Mark Twain National Forest acreage, continued urbanization would undoubtedly signal changing economic growth and land development patterns in these more rural areas as well.

## **DEMOGRAPHIC TRENDS**

Demography refers to the study of population. Demographers are concerned with the size and distribution of the population, the age and gender of the population, social and economic characteristics of the population and the way these components change over time (Shyrock, 1973, 2).

An understanding of local demographic patterns is an important part of the planning process for Christian County. Changes in the population have a direct influence on physical growth and development of the County. The size and composition of the population play a large role in

determining how much land is necessary for housing, retail business, industry, streets and community facilities.

This chapter discusses historical population trends and characteristics of the population in Christian County. This demographic information has also been used to develop population projections for the County to the year 2020. Population projections serve as a primary basis for many of the future land development, community services and utility service recommendations noted in later chapters of the Plan.

### **Components of Population Change in Christian County**

Three factors affect population change in any political subdivision, including Christian County. These factors include birth rates, death rates and migration. While a declining birth rate has been the primary component of population change for the State of Missouri over the past decade, migration is the dominant factor affecting Christian County's rate of population growth. The County's growth rate since the 1970s has far outpaced that of both Missouri and the United States. Between 1990 and 2000, the County's population increased by 21,641 persons. Only 16.1% of this number, or 3,501 persons, are attributed to natural increase (number of births less the number of deaths). While in-migration has accounted for the overwhelming majority of new population in Christian County over the past decade, the percentage of natural increase is nearly the same as for the previous decade, which was 16.4%. Table 4-1 lists the vital statistics for Christian County between 1990 and 2000.

TABLE 4-1

#### **VITAL STATISTICS, 1990-2000**

---

Year	Number Births	Number Deaths
------	---------------	---------------

---

1990	508	221
1991	485	239
1992	540	240
1993	535	295
1994	575	298
1995	650	288
1996	653	362
1997	682	371
1998	701	373
1999	807	393
2000	858	413
Total	6,994	3,493

---

Source: Missouri Department of Health, Center for Health Statistics.

Several national and regional trends have contributed to the rate of migration into Christian County. The past few decades have seen a national migration trend to the "sunbelt". Christian County has been on the receiving end of this national migration. In addition to the pattern of migration to the "sunbelt", the County's rapid growth since 1970 also reflects a second national phenomenon--migration from larger urban areas to small communities and rural areas. This phenomenon is evidenced by the rapid population increases in several of the County's incorporated communities, such as Nixa and Ozark.

A third factor contributing to the County's rapid growth during the 1970s was industrial expansion and increased employment opportunities in nearby Springfield during the same time period. Improvements to major transportation routes that link Christian County with the Springfield metropolitan area, such as U.S. Highway 160, spurred continued population growth during the 1980s and 1990s.

Table 4-2 notes the actual total population for Christian County and its political subdivisions since 1970. Table 4-3 indicates the percentage increases in population from decade to decade. As shown in Table 4-2, Christian County's total population has increased from 15,124 in 1970 to 54,285 in 2000. The fastest rate of growth, 66.3%, occurred between 1990 and 2000.

### **Urban/Rural Growth Trend**

Tables 4-2 and 4-3 provide not only a record of population growth for Christian County as a whole, but also a comparison breakdown of rural and urban population in the County. As shown, both the urban and rural populations in Christian County have steadily increased since the 1970s.

Figure 4-1 graphically displays the urban/rural growth trends of Christian County since 1970. In 2000, the rural population accounted for 51.2% of total County population. From 1970 through 1990 the rural/urban ratio had changed little with the majority of the County's population living in the unincorporated area. However, from 1990 to 2000 the urban population has increased to where the ratio between rural and urban is nearly equal.

These urban/rural growth patterns suggest that the amenities available in smaller urban communities, such as public water and sewer, are not the only locational factors contributing to the County's growth rate. Unincorporated areas of the County, which do not have public water and sewer or other urban amenities, have experienced constant growth. Other locational factors, such as cost of land and housing, rural atmosphere and/or limited governmental regulation have undoubtedly influenced the rural growth rate.

Christian County is expected to experience continued rapid growth during the 2000s, with the focus of growth occurring in the northern and central sections of the County, in and around the cities of Nixa and Ozark. This portion of the County is expected to receive the greatest growth over the next decade for two primary reasons:

1. Both Nixa and Ozark are in the path of growth from the Springfield metropolitan area and are connected to the Springfield area by four-lane highways.
2. Approximately 142 square miles of southern and eastern Christian County are within the Mark Twain National Forest. Development of this land area, which is controlled by the National Park Service, is restricted. As such, limited development is anticipated in these areas.



TABLE 4-2  
POPULATION GROWTH AND CHANGE

Census Year	1970	1980	1990	2000 of Total	2000 %
Christian County	15,124	22,402	32,644	54,285	100.0
Rural Population	9,534	14,665	21,173	27,782	51.2
Urban Population	5,590	7,747	11,471	26,503	48.8
Billings	760	911	989	1,091	2.0
Clever	430	551	580	1,010	1.9
Fremont Hills *	-----	-----	201	597	1.1
Highlandville **	-----	-----	-----	872	1.6
Nixa	1,636	2,662	4,707	12,124	22.3
Ozark	2,384	2,980	4,243	9,665	17.8
Sparta	380	643	751	1,144	2.1

Source: U.S. Bureau of the Census, *General Social and Economic Characteristics, Missouri, 1900-1980; Fourteenth Census of the U.S., 1920 vol. 1, Population Composition and Characteristics by States; Census of Population, 1990; STF 1 Profile Report for State of Missouri and Selected Counties, 1990; Summary File 1, 2000 Decennial Census.*

\* Fremont Hills incorporated in 1986.

\*\* Highlandville incorporated in 1995.

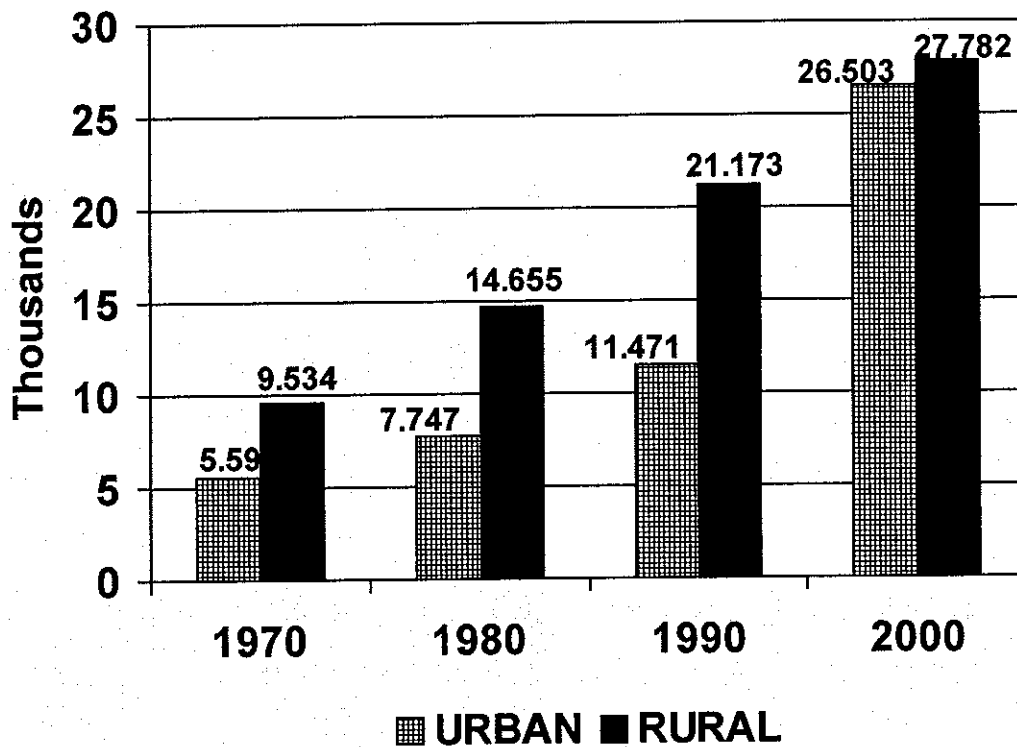
TABLE 4-3  
POPULATION PERCENT OF CHANGE

	1970-1980	1980-1990	1990-2000
Christian County	48.1%	45.7%	66.3%
Rural Population	53.7	44.5	31.2
Urban Population	38.6	48.1	131.0
Billings	19.9	8.6	10.3
Clever	28.1	5.3	74.1
Fremont Hills	-----	-----	197.0
Highlandville	-----	-----	-----
Nixa	62.7	76.8	157.6
Ozark	25.0	42.4	127.8
Sparta	69.2	16.8	52.3

Source: U.S. Bureau of Census, *General Social and Economic Characteristics, Missouri, 1900-1980; Fourteenth Census of the U.S., 1920 vol. 1, Population Composition and Characteristics by States; Census of Population, 1990; STF 1 Profile Report for State of Missouri and Selected Counties, 1990; Summary File 1, 2000 Decennial Census.*

FIGURE 4-1

URBAN / RURAL POPULATION CHANGE



Source: U.S. Bureau of the Census, *General Social and Economic Characteristics, Missouri 1900-1980*; *Fourteenth Census of the U.S., 1920 vol. 1, Population Composition and Characteristics by States*; *Census of Population, 1990; STF 1 Profile Report for State of Missouri and Selected Counties, 1990*; *Summary File 1, 2000 Decennial Census*.

## Racial Composition

The 2005 - 2007 American Community Survey from the U.S. Census Bureau indicates that Christian County's racial composition is overwhelmingly white, accounting for approximately 97.4% of the total population. As noted in Table 4-4, the Census Bureau shows the second largest racial group in the County as Black or African American persons making up 0.7% of the total population. The Hispanic or Latino population is accounted for separately by the Census Bureau and their numbers were estimated at 1420 persons which actually places them as the second largest racial component in Christian County's population mix.

TABLE 4-4  
RACIAL COMPOSITION

Race	Total Number	Percent of Total
White	67,934	97.4%
Black	457	0.7%
American Indian, Alaska Native	408	0.6%
Asian or Pacific Islander	229	0.3%
Other Race	722	1.1%

*\*\*Hispanic population 1420 or 2.0% listed in separate table.*

Source: U.S. Bureau of the Census, *2005 - 2007 American Community Survey 3 - Year Estimates*

The age structure of a population is important to a demographic analysis because it reflects changes in behavior at various stages in the life cycle as well as potential needs of various age groups within the population. Different age groups have their own social and economic needs (Bogue, 1969) which should be taken into consideration in the planning process. For example, age structure of a population influences planning for potential school enrollments, work force and economic development potential, housing needs and elderly services.

Table 4-5 provides a breakdown of Christian County's 2000 population by age cohort (age group) along with a comparison to Missouri's population. As shown, 30.2% of the County's total population is included in the youth age cohorts 0-19. The County's percentage of youth-aged population is slightly higher than that of the State (28.5%).

Nearly one-third of the County's population is in the age group 25-44, a proportion only slightly higher than that of the State (29.1%). The large percentage of individuals in this age group reflects two phenomena: (1) the maturing of the baby boom generation--those born between 1946 and the early 1960s, and (2) in-migration of younger population in the family-forming years, attracted by employment opportunities in the County and nearby Springfield and other quality of life factors such as land and housing costs and quality of schools.

TABLE 4-5

AGE SPECIFIC POPULATION, 2000

AGE COHORT	CHRISTIAN COUNTY		MISSOURI	
	Total Number	% of Population	Total Number	% of Population
0-4	4,169	7.7	369,898	6.6
5-9	4,236	7.8	398,898	7.1
10-14	4,236	7.8	412,080	7.4
15-19	3,760	6.9	413,296	7.4
20-24	3,105	5.7	369,498	6.6
25-34	8,088	14.9	738,733	13.2
35-44	9,130	16.8	887,569	15.9
45-54	7,140	13.2	742,462	13.3
55-59	2,676	4.9	279,073	5.0
60-64	1,994	3.7	228,325	4.1
65-74	3,223	5.9	393,226	7.0
75-84	1,906	3.5	263,582	4.7
85+	622	1.1	98,571	1.8
Total	54,285	100.0	5,595,211	100.0

Source: U.S. Bureau of the Census, *STF 1 Profile Report for State of Missouri and Selected Counties, 2000*.

Of interest is the population group aged 65+ (10.5%), which represents a greater percentage of the total population than the age cohort 55-64 (8.6%). This increase in the retirement-aged population indicates not only increased life spans but also in-migration. The Ozarks region in general is attracting retirees due to mild climate, recreational opportunities, lower costs of living and easy access to regional medical facilities.

Although in-migration of retirement-aged population is evident, the County has a lower percentage of retirees than the State (13.5%). Today, children and baby boom generation adults primarily dominate Christian County's population. Over the next decade, the County will continue to experience an increased demand for educational services and housing to meet the needs of these specific age groups. However, as the baby boom generation moves into retirement within the next

20 years, the County will likely see increased demands for housing and social services for the elderly population.

## **Median Age**

An index of age composition is the median age of a population. Median age, which is determined by dividing the population into groups of equal size, can be compared to state and national statistics to determine any significant variances from larger geographic area patterns. For comparison purposes, Table 4-6 shows the median age for Christian County, the State of Missouri, the United States and surrounding Stone, Taney and Greene Counties.

As shown, the median age of Christian County's population has increased from 30.6 years in 1980 to 34.5 years in 2000. Although an increasing median age is a national trend, due to lower birth rates and the natural aging of the population, Christian County's median age is lower than that of the State, the nation and surrounding counties. This supports the previous observation that the County is primarily attracting younger-aged individuals and families. In contrast, the significantly higher median age figures for Stone and Taney Counties reflects the importance of the Table Rock and Taneycomo Lakes areas as retirement centers.

TABLE 4-6  
MEDIAN AGE TRENDS

Area	1980	1990	2000
------	------	------	------

Christian County	30.6 yrs.	32.6 yrs.	34.5 yrs.
Greene County	29.2	32.5	35.1
Stone County	41.2	42.9	44.1
Taney County	40.5	40.2	38.8
Missouri	30.9	33.5	36.1
United States	30.1	32.9	35.3

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Source: U.S. Bureau of the Census, *General Population Characteristics, Missouri, 1980-2000; Census of Population and Housing, 1980-2000.*

The age dependency ratio is used to measure the impact of age structure on the productive or income earning portion of the population. The ratio of the "dependent" population to the "productive" population is an approximate measure of the number of dependents each productive member of the population must support. For calculation purposes, the "dependent" population is all those persons between the ages 0-14 and over 64. This is an approximate measure, since not all persons between 15 and 64 are actually producing income and some teen-agers and adults over 64 are wage earners.

Table 4-7 notes the trend changes in Christian County's age dependency ratios since 1970. Christian County's age dependency ratio in 2000 was 51.2, which means that for every 100 persons in the income earning age group there were 51.2 dependents.

The County's total age dependency ratio in 2000 was slightly less than the Missouri ratio of 52.9. However, the County's youth dependency ratio of 35.2 was slightly greater than Missouri's youth dependency ratio (32.3). The youth age group is the principal component of the dependent population in Christian County.



TABLE 4-7  
AGE DEPENDENCY RATIOS

Age Group	1970	1980	1990	2000
Youth (0-14)	46.9	39.4	36.7	35.2
Elderly (65+)	22.0	18.6	17.2	16.0
Total Population	68.9	58.0	53.9	51.2

Source: U.S. Bureau of the Census, *General Social and Economic Characteristics, Missouri 1900-1980; Fourteenth Census of the U.S., 1920. Vol. 1, Population Composition and Characteristics by States; Census of Population, 1990; STF 1 Profile Report for State of Missouri and Selected Counties, 1990; Census 2000 Summary File (SF 1)*.

From a historical perspective, the County's age dependency ratio has decreased significantly since the 1960s. This can be attributed to the maturation of the later baby boomers and mini-baby boomers (those born in the 1960s and early 1970s) and movement into the working years. Due to the natural aging process and continued decreases in birth rates, Christian County can expect to see a significant increase in its age dependency ratio over the next two decades as the baby boomers move into the retirement years.

In the shorter term, the County can expect to see a continued demand for single-family housing, education and other community services to meet the needs of the youth dependents and working age population. As previously noted, however, planning for gerontology health care and alternative housing to meet the needs of the elderly will become increasingly warranted over the coming decades.

## Sex Composition

The sex composition of a population is an important criteria in many areas of planning-- health services, military planning, sales programs and community services (Shyrock, 1973). Defined as the number of males per 100 females in a population, the sex ratio is a common statistical measure of sex composition. A sex ratio greater than 100 indicates an excess of males, while a ratio less than 100 reflects an excess of females in the population. In general, sex ratios tend to fall between 95 and 102 (Shyrock, 1973, 191).

Table 4-8 shows Christian County's sex ratios for the years 1970 through 2000. Since 1970, the County has had a slight excess of females in the population, but this is well within the normal range.

Evaluation of Christian County's sex composition by age group indicates that all groups have experienced an increase in total numbers between 1990 and 2000. Table 4-9 shows the changes in sex ratios for the various age cohorts in the County over the past decade. In general, the trends in the County's sex ratios do not show any significant variances from national norms.

TABLE 4-8  
SEX RATIOS

	1970	1980	1990	2000
MALES	7,389	10,986	15,946	26,402
FEMALES	7,735	11,416	16,698	27,883
SEX RATIOS	95.53	96.23	95.49	94.69

Source: U.S. Bureau of the Census, *General Social and Economic Characteristics, Missouri 1900-1980*; *Census of Population, 1990*; *STF 1 Profile Report for State of Missouri and Selected Counties, 1990*; *Census 2000 Summary File 1 (SF 1)*.

The higher sex ratios in the early youth age cohorts (0-4) reflect the tendency of male births to exceed female births. Also, the lower sex ratios in the elderly age groups reflect the greater life span of the female population. There has been, however, a significant increase in the total numbers of both elderly males and females since 1980, supporting the observation of in-migration of retirement-aged population.

TABLE 4-9  
SEX RATIOS BY AGE COHORT

Age Cohort	1990			2000		
	Males	Females	Sex Ratio	Males	Females	Sex Ratio
0-4	1258	1172	107.3	2105	2064	102.0
5-9	1416	1263	112.1	2171	2065	105.1
10-14	1383	1297	106.6	2146	2090	102.7
15-19	1246	1196	104.1	1927	1833	105.1

20-24	925	1024	90.3	1462	1643	89.0
25-34	2627	2940	89.3	3920	4168	94.0
35-44	2543	2640	96.3	4424	4706	94.0
45-54	1745	1724	101.2	3505	3635	96.4
55-64	1285	1317	97.5	2262	2408	93.3
65-74	929	1105	84.0	1520	1703	85.3
75+	589	1020	57.7	960	1566	61.3

Source: U.S. Bureau of the Census, *Census of Population, General Social and Economic Characteristics, Missouri 1990; STF 1 Profile Report for Missouri and Selected Counties, 2000.*

## Population Pyramids

A graphic technique used to display the age-sex composition of a population is the population pyramid. The classic population pyramid that shows high birth rates and high death rates typically represents pre-industrial and developing societies. Today, however, the national trend of declining birth rates and increased life spans is evidenced in the smaller base of the classic population pyramid.

Figures 4-2 and 4-3 represent the population pyramids for Christian County's 1990 and 2000 populations. These graphics display the impacts of the natural aging of the population as well as the decline in birth and death rates on the County's population. The bulge in the middle age years represents the baby boom population and in-migration. The most significant inference that can be drawn from these graphic representations is the dominance of the youth and younger, working-aged populations and in-migration of retirement population.

## Population Projections

In order to develop a plan that will be responsive to the needs of Christian County's population, both now and in the future, it is essential to know what the future population will be. Population projections are necessary in order to provide guidance for the timely planning of

community services, such as schools, law enforcement and social services and for necessary public infrastructure, including roads, water, sewer and utilities. Population projections are not the same as predictions. Projections are based on historical and current demographic trends and what the future population may be if these trends continue (Missouri Office of Administration, 1988). Projections are also based on a set of assumptions on how demographic patterns may change in the future. The assumptions used in this report include the following:

1. Birth rates will remain relatively stable, but low during the coming decade in keeping with national and state trends.
2. Death rates will remain stable through the 1990s, with a slight increase in the period 2000-2010. Life expectancy will continue to increase during the 1990s, accounting for the relatively stable death rate.

FIGURE 4-2

CHRISTIAN COUNTY POPULATION PYRAMID, 1990

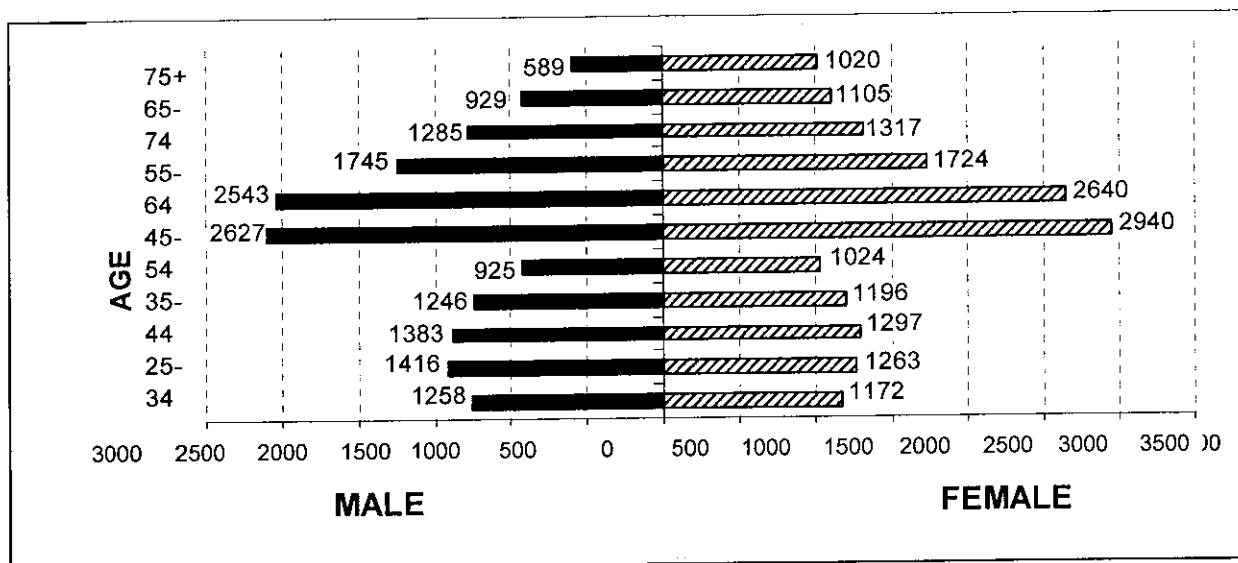
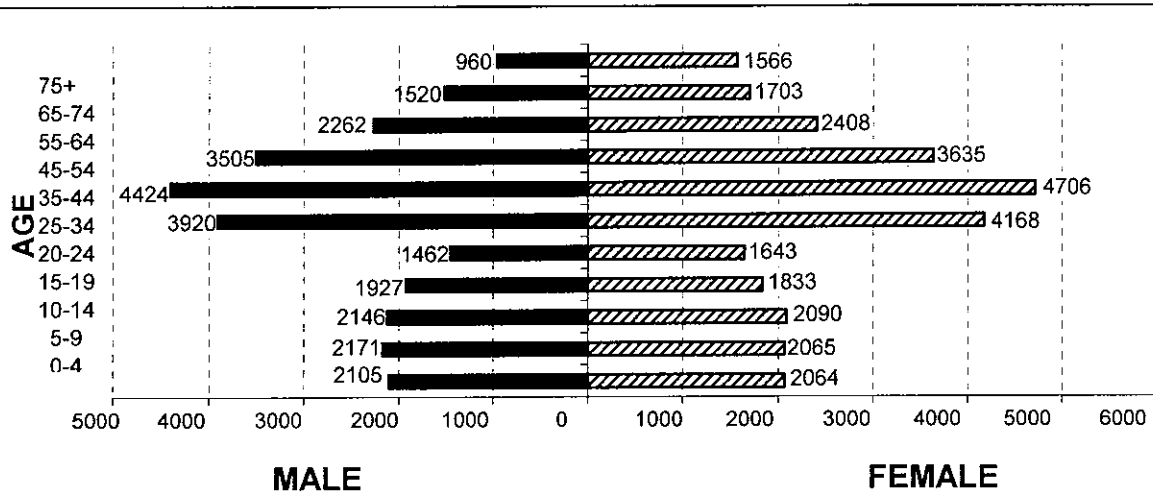


FIGURE 4-3

CHRISTIAN COUNTY POPULATION PYRAMID, 2000



3. While changing fertility rates (births) have been the primary factor affecting population change in the State of Missouri, in-migration will be the dominant component of population change in Christian County during the 1990s.
4. There will be no major, negative changes in regional economic conditions or employment opportunities that would significantly alter current migration patterns.

## **Projection Techniques**

Demographers use a variety of mathematical techniques to project population, ranging from complex models based on historical age, sex, migration, birth rate and death rate data (cohort survival model) to more simplified models which combine the components of population change. Four different projection techniques have been used here to arrive at a range of population projections for Christian County to the year 2020. It should be noted, however, that projecting 20 years into the future could be speculative at best. This is of particular concern for Christian County due to the greatly varying rates of population growth over the past 30 years. It is recommended that population estimates for Christian County be determined within five years to gauge the accuracy of the projections developed here.

The projection techniques used include: (1) cohort survival, (2) arithmetic change, (3) exponential rate of change and (4) geometric rate of change. All techniques are briefly described in the following pages (*see Appendix A for computations*).

### **Cohort Survival Model**

*A working paper recently prepared by the Springfield Planning and Development Department includes population projections for Greene and Christian Counties for long range planning and regional transportation planning purposes. Using the cohort survival model, this study arrived at a year 2000 projection of 50,300 persons and a year 2010 projection of 75,715 persons for Christian County.*

## **Arithmetic Change Model**

The arithmetic change or straight-line projection model utilizes a nearly equal and absolute rate of growth over time, based on historical trends. This is a simple projection technique that combines all components of population change. Christian County's absolute population growth during the 1990s was projected forward to arrive at a year 2010 projection of 75,926 persons and a year 2020 projection of 97,567 persons.

## **Geometric Rate of Change Model**

The geometric change projection model is also an aggregate method which presumes that population will grow at a constant rate over time. This technique can best be compared to the process of calculating simple interest. This model resulted in a population projection of 90,265 persons in the year 2010 and 150,100 persons in 2020. It should be cautioned that populations rarely increase at the same constant rate over time, which tends to lessen the accuracy of this particular projection technique.

## **Exponential Rate of Change Model**

The exponential change model is a variation of the geometric change projection model. This technique is similar to the process of compound interest. Growth compounds at a constant rate over time, but absolute increments (base population) increase. The use of the exponential change model resulted in a projection for the year 2010 of 83,312 persons and a population of 127,780 by the year 2020.

## **Recommended Population Projection**

The cohort survival projection technique normally provides a more accurate projection than the other simpler models noted above. However, the cohort survival projections noted here are significantly higher than the projections developed from the arithmetic, geometric or exponential



rate models. It is felt that the accuracy of all of the projections derived for Christian County is limited by the County's rapid growth rate.

*For this reason, it is recommended that the County use an average of these projection figures for general planning purposes. Christian County's actual population in the years 2000 and 2010 may actually fall between the average projection range (47,081 and 66,870, respectively) and the higher cohort survival projections.*

<u>Projection Model</u>	<u>Year 2010</u>	<u>Year 2020</u>
Arithmetic Change	75,926	97,567
Geometric Rate	90,265	150,100
Exponential Rate	83,312	127,780
Cohort Survival		
<b>Average Projection</b>		

## **Household Characteristics**

Household statistics are used in the planning process as indicators of probable demand for various types of housing and related community facilities and services. In 2000, the U.S. Bureau of the Census defined a household as all persons living in a housing unit, including a single person or more than one related or unrelated person. One person per household is considered the householder (head of household).

The data in Table 4-10 show that the majority of the County's households in 2000 were family households (76.6%), a rate higher than that of the State (67.3%). The most striking

variances in the County's family household composition and that of the State are the percentages of married couple families and female-headed households. In total, 64.0% of the County's family households are married couple households in comparison to only 52.0% of married couple households for Missouri. Within this category, Christian County has a higher percentage of both married couple households with and without children (see Table 4-10).

The County also has a lower percentage of female-headed households (9.3%) than does the State (11.5%). The numbers of female-headed households with children is a particularly important housing and community services planning indicator as females tend to earn lower wages than their male counterparts and have less disposable income for housing. In addition, such households are often more dependent on public-supported social service programs. Although Christian County has a lower percentage of female-

TABLE 4-10  
HOUSEHOLDS BY TYPE, 2007

	Christian County		Missouri
	Number	Percent	Percent
Total Households	26,380	100.0%	100.0%
Family Households	20,286	76.9%	66.1%
with Children under 18 yrs	9,919	37.6%	30.3%

Married Couple Family	16,657	63.1%	50.0%
with Children under 18 yrs	7,529	28.5%	20.7%
Male Households, no wife present	1,132	4.3%	4.1%
with Children under 18 yrs	708	2.7%	2.2%
Female Households, no husband present			
	2,497	9.5%	11.9%
with Children under 18 yrs	1,682	6.4%	7.4%
Non-Family Households	6,094	23.1%	33.9%
Householder living alone	4,831	18.3%	28.4%
65 yrs and over	1,783	6.8%	9.8%
Households with one or more persons under 18 yrs			
	10,719	40.6%	33.3%
Households with one or more persons 65 yrs or over			
	5,042	19.1%	23.5%
Average Household Size	2.62		2.46
Average Family Size	2.98		3.03

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Source: U.S. Bureau of the Census, *2005 - 2007 American Community Survey 3 - Year Estimates*

headed households than the State, it should be noted that there has been a regional, state and national trend of increasing numbers of female-headed households over the past two decades and that this trend will most likely continue during the 2000s.

Christian County's greater percentage of family households in comparison to the State also means that the County has a lower percentage of non-family households. In 2000, the County's non-family households totaled 23.4%, as compared to 32.7% for Missouri as a whole. Of the non-family households, 2,288 or 58.6% were single females, supporting the overall national trends of delaying marriage due to career opportunities and changing social attitudes. Also contributing to the greater numbers of single female non-family households is the fact that females tend to have a longer life span.

### **Average Household Size**

Also of interest for housing planning purposes, is the average size of households. As indicated, the average size of Christian County households in 2000 was 2.63 persons, as compared

to 2.48 persons for all Missouri households. Household size has been decreasing since the 1970s, due to declining birth rates and an increase in single person households. While single family dwelling units will continue to be the dominant type of housing needed during the 2000s, there will most likely be an increasing demand for alternative housing types to meet the changing lifestyles of smaller family households and single person households.

## **ECONOMY**

Christian County's physical development pattern and potential for future growth are dependent in part on the structure and pattern of its economic base. This chapter of the Comprehensive Plan discusses the components and pattern of economic activity in Christian County, along with related labor force and income characteristics.

### **The Regional Economy**

The economy of Christian County is closely intertwined with that of the City of Springfield and the larger metropolitan area. Linked to the Springfield area by Highways 160, 65 and 60, Christian County residents are within easy commuting distance of Springfield for employment, shopping and services. The 2005 - 2007 American Community Survey indicates that the estimated average travel time to work for Christian County residents is 23.8 minutes.

The close relationship between the economies of Christian County and greater Springfield is evidenced by the employment patterns and places of employment of the Christian County labor force. The 2000 Census indicates that 17,272 persons, or 63% of the employed residents of Christian County, work outside of the County. As shown in Table 5-1, 50.7% of all employed work in Springfield. Overall, 92.1% of the County's employed labor force works in the Springfield

Metropolitan Statistical Area (MSA), which includes Greene, Christian and Webster Counties. Christian County's economic future will continue to be influenced by larger regional economic trends, including not only the Springfield area but also the rapidly growing tourism and recreation economy in the Branson area to the south.

TABLE 5-1

PLACE OF EMPLOYMENT

Christian County Employed	Number	Percent of Total
Work in County of Residence	9,777	35.7%
Work Outside County of Residence	17,272	62.9%
Work Outside of State	372	1.4%
Work in MSA of Residence	25,267	92.1%
Work in Central City (Springfield)	13,921	55.1%
Work in Remainder of MSA	11,346	44.9%
Work Outside MSA of Residence	449	1.7%
Work in Central City	269	1.0%
Work in Remainder of MSA	180	0.7%
Work Outside of Any MSA	1,705	6.2%
Total Workers	27,770	100.0%

Source: U.S. Bureau of the Census, *2000 Census of Population and Housing, STF 3 Selected Characteristics*.